



U.S. Department  
of Transportation

Pipeline and  
Hazardous Materials  
Safety Administration

East Building, PHH-23  
1200 New Jersey Ave, SE  
Washington, D.C. 20590

**COMPETENT AUTHORITY CERTIFICATION FOR A  
TYPE B(U)  
RADIOACTIVE MATERIALS PACKAGE DESIGN  
CERTIFICATE USA/9185/B(U)-96, REVISION 15**

The Competent Authority of the United States certifies that the radioactive material package design described in this certificate satisfies the regulatory requirements for a Type B(U) package as prescribed in the regulations of the International Atomic Energy Agency<sup>1</sup> and the United States of America<sup>2</sup>.

1. Package Identification - OP-100.
2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9185, Revision 13 (attached).
3. General Conditions -
  - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
  - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Engineering and Research, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.
  - c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

---

<sup>1</sup> "Regulations for the Safe Transport of Radioactive Material, 2012 Edition, No. SSR-6" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

<sup>2</sup> Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

**CERTIFICATE USA/9185/B(U)-96, REVISION 15**

- d. Records of Management System activities required by Paragraph 306 of the IAEA regulations<sup>1</sup> shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
4. Marking and Labeling - The package shall bear the marking USA/9185/B(U)-96 in addition to other required markings and labeling.
5. Expiration Date - This certificate expires on February 28, 2024. Previous editions which have not reached their expiration date may continue to be used.

This certificate is issued in accordance with paragraph(s) 810 of the IAEA Regulations and Section 173.471 of Title 49 of the Code of Federal Regulations, in response to the March 12, 2019 petition by Industrial Nuclear Company, Inc., San Leandro, CA, and in consideration of other information on file in this Office.

Certified By:



William Schoonover  
Associate Administrator for Hazardous  
Materials Safety

March 13, 2019  
(DATE)

Revision 15 - Issued to endorse U.S. Nuclear Regulatory Commission  
Certificate of Compliance No. 9185, Revision 13.

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1	a CERTIFICATE NUMBER	b. REVISION NUMBER	c DOCKET NUMBER	d PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
	9185	13	71-9185	USA/9185/B(U)-96	1 OF	3

2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

- |  |  |
|--|--|
| a. ISSUED TO ( <i>Name and Address</i> )<br>Industrial Nuclear Company, Inc.<br>14320 Wicks Blvd.<br>San Leandro, CA 94577 | b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION<br>Industrial Nuclear Company application<br>dated July 1, 1999, as supplemented. |
|--|--|

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model No.: OP-100

(2) Description

The Model No. OP-100 package consists of either an IR-50 source changer, or an IR-100 exposure device, which is positioned within a 10 gallon drum. The drum is made of 20 gauge steel, and is closed with a 12 or 13 gauge closure ring and a 5/8 inch diameter steel bolt. A plywood or polyurethane foam support structure centrally locates either the Model IR-50 or the Model IR-100 within the steel drum overpack.

The IR-50 source changer and the IR-100 exposure device are approximately 8.87 inches long, 4.5 inches wide, and 8.5 inches high. The radioactive material contents consist of iridium-192 or selenium-75 in source assemblies that meet the requirements for special form material. The source assemblies are positioned within a zircalloy or titanium "S" tube within the IR-50 or IR-100. The "S" tube is surrounded by a shield assembly made of depleted uranium. The uranium shield assembly is encased in a stainless steel housing. The space between the uranium shield assembly and the stainless steel casing is filled with a rigid polyurethane foam. The maximum weight of the IR-50 source changer is 55 pounds; the maximum weight of the IR-100 exposure device is 53 pounds, and the maximum gross weight of the Model No. OP-100 package is 77 pounds.

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1	a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
	9185	13	71-9185	USA/9185/B(U)-96	2 OF	3

(3) Drawings

The packaging is constructed in accordance with Industrial Nuclear Company Drawing Nos.: OP 100-1, Rev. 5; OP-100-1-2, Rev. 0; IR 50-1A, Rev. 4; IR 50-1B, Rev. 1; IR 100-1A, Rev. 5; and IR 100-1B, Rev. 2.

5. (b) Contents

(1) Type and form of material

Iridium-192 or selenium-75 as sealed sources that meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package

120 Ci (4.44 TBq) (output)

Output curies are determined in accordance with American National Standard N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography."

6. The source shall be secured in the shielded position of the packaging by the source assembly lock, lock cap, and the shipping plug (IR-100 only). The source assembly lock, lock cap, and the shipping plug (IR-100 only), must be fabricated of materials capable of resisting a 1475°F fire environment for one-half hour and maintaining their positioning function. The ball stop of the source assembly must engage the source assembly lock. The flexible cable of the source assembly and shipping plug must be of sufficient length and diameter to provide positive positioning of the source in the shielded position.

7. The name plate on the overpack must be fabricated of materials capable of resisting a 1475°F fire environment for one-half hour and maintain its legibility. The two vent holes in the side of the overpack must be covered with tape or rubber (plastic) plugs to prevent entry of rain water.

8. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) The package shall be prepared for shipment in accordance with the Operating Procedures of Chapter 7 of the application and

(b) Each package must meet the Acceptance Tests and Maintenance Program of Chapter 8 of the application.

9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1	a CERTIFICATE NUMBER	b REVISION NUMBER	c DOCKET NUMBER	d PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
	9185	13	71-9185	USA/9185/B(U)-96	3 OF	3

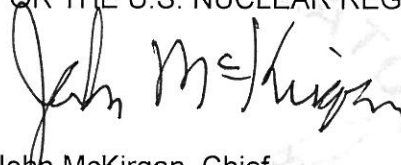
- 10. Revision No. 11 of this certificate may be used until February 28, 2019.
- 11. Expiration date: February 28, 2024.

REFERENCES

Industrial Nuclear Company application dated July 1, 1999.

Supplements dated: September 14 and December 29, 1999; October 24, 2003; March 22, and July 12, 2007; November 25, 2008, January 24, 2014; July 21, August 6, 13, 17, September 22, 23, and 30, 2015; August 10, 2017; October 22, 2018.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



John McKirgan, Chief  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Date: February 28, 2019



U.S. Department of  
Transportation

**Pipeline and  
Hazardous Materials  
Safety Administration**

East Building, PHH-23  
1200 New Jersey Ave, SE  
Washington, D.C. 20590

**CERTIFICATE NUMBER:** USA/9185/B(U)-96

**ORIGINAL REGISTRANT(S) :**

Source Production and Equipment Company, Inc.  
113 Teal Street  
St. Rose, LA, 70087  
USA

Industrial Nuclear Company, Inc.  
14320 Wicks Blvd.  
San Leandro, CA, 94577  
USA

Bonded Inspections Incorporated  
3840 Marquis Street  
Garland, TX, 75042  
USA

NTS Enterprises, Inc.  
811 W. Morse Avenue  
Schaumburg, IL, 60193-4535  
USA

Western Industrial X-Ray  
1707 Enterprise Drive  
Unit J  
P.O. Box 238  
Fairfield, CA, 94533  
USA

Universal Testing LLC  
393 South Main  
Clearfield, UT, 84015  
USA

Vital Inspection Professionals  
180 Airpark Industrial Road  
Alabaster, AL, 35007  
USA

U.S. Non-Destructive Inspection  
P.O. Box 7717  
Abilene, TX, 79608  
USA

Isoflex Radioactive  
108 Teal Street

St Rose, LA, 70087  
USA

Industrial Inspection and Analysis  
1110 Energy Drive  
Abilene, TX, 79602  
USA